

Remarks

New Claims

Applicant has submitted new Claims 28-43. New Claim 28 is analogous to cancelled Claim 7 while new Claim 29 depends from new Claim 28. New Claims 30-34 depend from amended Claim 1 and claim inventions analogous to those claimed in cancelled Claims 2-6, respectively. New Claims 35-37 depend from amended independent Claim 9 and claim inventions analogous to those claimed in cancelled Claims 10-12, respectively. New Claims 38-43 claim inventions analogous to those claimed in cancelled Claims 14-19.

Applicant courteously notes that the headings in the Remarks below reflect the claim rejections in the Office Action mailed December 22, 2004 to which an Amendment was filed March 22, 2004. The remarks below include references to the new claims submitted with this Supplemental Amendment.

The § 102 (e) Rejections of Claims 1, 5-7, 9-12, 14 and 17-19

The Examiner has rejected Claims 1, 5-7, 9-12, 14, and 17-19 under 35 U.S.C. § 102 (e) as anticipated by United States Patent No. 6,175,422 to Penn, et al. ("the Penn patent" or "Penn"). In the paper filed March 22, 2004, Applicant cancelled Claims 5-7, 10-12, 14, and 17-19 thereby rendering the rejection of those claims moot. Applicant has amended independent Claims 1 and 9 to incorporate the claim elements of Claims 7 and 12, respectively. Applicant has added new Claims 28, 29, 33-38, and 41-43 as discussed above. Applicant respectfully traverses the rejection of amended Claims 1 and 9 and requests reconsideration.

Applicant has amended independent Claim 1 to include the element of using differences in the intensity values and/or wavelengths and/or polarizations of detected object model light to generate object model data. Support for amended independent Claim 1 is found in Paragraph 0027 (page 8, lines 9-18) of the instant application. Detected light is light that originates from or in the object model being examined, such as light that is reflected from, scattered by or fluoresces within the object model after it is illuminated by a light source.

The Examiner cites both col. 3, line 59 - col. 4, line 6 and col. 1, line 66 - col. 2, line 4 of the Penn patent as disclosing the generation of object model data using differences in the intensity values and/or wavelengths and/or polarizations of detected object model light. Applicant respectfully submits that no where in the Penn patent, including the portions cited by the Examiner, is light of any type used to generate data to control the fabrication of a three dimensional object. Col. 3, line 59 – col. 4, line 6 discloses the use of different colored layers of liquid insoluble material (not detected light) or the use of different colors within a specific layer of liquid insoluble material. However, this refers to differences in the color of the three-dimensional object being generated not the control data used to control the fabrication of that three-dimensional object. In addition, col. 1, line 66-col. 2, line 4 of Penn discloses the laser sintering of a mixture of powders to form a three dimensional object. Again, this cited portion of the Penn patent fails to disclose the generation of control data based on differences of the properties of detected light emanating from the object model. Moreover, Penn fails to disclose the step of transmitting control data to an apparatus for three dimensional object generation. Applicant respectfully traverses the rejection of amended independent Claim 1 and requests reconsideration.

In the same way, amended independent Claim 9 claims the step of generating object model data from differences in detected light intensity and/or wavelength and/or polarization. As noted above, the Penn patent does not disclose this claimed step of generating data from differences in detected light intensity values and/or wavelengths and/or polarizations to control the generation of a three dimensional object. In addition, Penn fails to disclose the claimed step of transmitting this control data to an apparatus for three dimensional object generation. For these reasons, Applicant respectfully traverses the rejection of amended independent Claim 9 and requests reconsideration.

New Claims 28-34 depend from amended independent Claim 1 and are analogous to the inventions claimed in original Claims 2-7 which were previously rejected and are now cancelled. Likewise, new Claims 35-37 claim the inventions claimed in original Claims 10-12 which were previously rejected and are now cancelled. Because, Claims 28-34 and Claims 35-37 depend from amended Claim 1 and Claims 9, respectively, they incorporate all the elements of those

claims. Since, as noted above, the Penn patent fails to anticipate Claims 1 and 9, as amended, the Penn patent fails also to anticipate dependent Claims 28-34 and dependent Claims 35-37.

New independent Claim 38 is analogous to the invention claimed in original Claim 14, which was previously rejected and is now cancelled. Claim 38 claims a system for generating a three dimensional object that includes a processing unit that generates object model data based on differences in the intensity values and/or wavelengths and/or polarizations of detected light emanating from an object model. As mentioned above, Penn does not disclose the generation of control data based on differences in any detected light properties, let alone differences in the detected light intensity, wavelength and polarization as claimed in Claim 38. Therefore, Penn fails to anticipate new Claim 38 and therefore fails as a reference under § 102 (e).

New dependent Claims 41-43 depend from new independent Claim 38 and therefore incorporate all the elements of that claim. Because, as discussed above, Penn fails to anticipate independent Claim 38, it likewise fails to anticipate all claims depending from independent Claim 38. Therefore, Penn also fails to anticipate dependent Claims 41-43 under § 102 (e).

The § 103 (a) Rejections of Claims 2-4, 8, 13, and 15-16

The Examiner rejected Claims 2-4, 8, 13, and 15-16 under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 6,175,422 to Penn, et al. ("Penn" or "the Penn patent") in view of United States Patent No. 6,259,104 to Baer ("Baer" or "the Baer patent"). In the Reply dated March 22, 2004, Applicant cancelled Claims 2-4, and 15-16. Analogous inventions are now claimed in new Claims 30-32 and 39-40, respectively. In addition, Applicant has amended dependent Claims 8 and 13. Applicant respectfully traverses these rejections and requests reconsideration.

"To establish a *prima facie* case of obviousness three criteria must be met. First, there must be some suggestion or motivation to modify the reference. Second, the reference or combination of references must provide a reasonable expectation of success. The third requirement for a *prima facie* case of obviousness is that the reference must teach or suggest all limitations of the claim at issue. The teaching or suggestion to make the combined combination

and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure." *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicant courteously notes that amended Claim 8 and new Claims 30-32 depend from amended independent Claim 1 and amended Claim 13 depends from amended independent Claim 9, thereby incorporating all the elements of those claims. In making the obviousness rejection under § 103 (a), the Examiner cited the Baer patent in combination with the Penn patent. As noted above, the Penn patent fails to disclose or suggest the element of generating object model data from differences in the intensity and/or wavelength and/or polarization of detected light emanating from the object model. Applicant respectfully submits that Baer fails to suggest the use of detected light in any control function, let alone the use of differences in detected light properties from an object model to control the generation of a three-dimensional object. It can be seen that neither Penn nor Baer suggests the use of control data of any type based on detected light from an object model. Therefore, both Penn and Baer, either alone or in combination, fail to disclose, suggest, or teach the inventions claimed in amended independent Claims 1 and 9, specifically a method of generating a three dimensional object that includes the claimed step of generating control data from differences in the intensity and or wavelength and/or polarization of detected light from an object model. For this reason, the combination of the Penn and Baer patents fails to render amended independent Claims 1 and 9 obvious under § 103 (a). If an independent claim is not obvious, then the claims depending from that independent claim are also not obvious. Therefore, Applicant respectfully submits that dependent Claims 8 and 30-32 are also not obvious over Penn in view of Baer. Applicant respectfully requests reconsideration.

Moreover, Applicant respectfully traverses the specific rejection of amended Claims 8 and 13. The Examiner cites Baer (col. 8, lines 54-61) as disclosing the depiction of the dynamic processes of an object plane by the scanning of a plurality of object planes over time. However, Applicant respectfully submits that Baer discloses only the production of a single composite image produced by the use of scanning in depth of different object planes. However, nowhere in Baer is there suggested multiple scanings of the same object plane of an object model over time to generate a three dimensional model of that object plane in order to depict the dynamic

processes taking place in that object plane over time. In short, the three dimensional object produced by the methods of amended Claims 8 and 13 depicts the dynamic process that take place in a single object plane of the object model, while the Baer patent discloses a method of producing a composite of an entire object model. Baer in combination with Penn fails to render amended Claims 8 and 13 obvious under § 103 (a) because the combination of the two references fails to disclose the production of a three dimensional object depicting a composite of dynamic process at different times in a single plane of an object model as claimed in amended Claims 8 and 13. Applicant respectfully requests reconsideration.

New Claims 39 and 40 claim inventions analogous to cancelled Claims 15 and 16 previously rejected as patentable under 35 U.S.C. § 103 (a) over Penn in view of Baer. Claims 39 and 40 depend from new independent Claim 38 and thus incorporate all the elements of that claim. Specifically, dependent Claims 39 and 40 each include the claim element claimed in independent Claim 38 of a processing unit that generates object model data as a function of differences in intensity values and/or wavelengths and/or polarizations of detected light emanating from an object model. As discussed above, Penn and Baer fail to disclose or suggest an apparatus or method that enables the generation of object model data of any type that is based on detected light that originates from an object model. Therefore, the combined reference of Penn and Baer fails to establish a *prima facie* case of obviousness to reject Claims 39 and 40 as they fail to disclose or suggest all the elements of those claims.

Conclusion

In view of the foregoing discussion, it is respectfully submitted that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "C. Richard Lohrman".

C. Richard Lohrman
Registration No. 46,878
ATTORNEY FOR APPLICANT
Simpson & Simpson PLLC
5555 Main Street
Williamsville, NY 14221
Phone: (716) 626-1564
Fax: (716) 626-0366

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